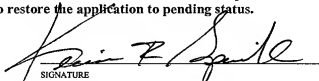


4c-304 48" FORM PTO-1390 TRADEMARK OFFICE (REV 11-2000)		U.S. DEPARTMENT OF COMMERCE PATENT AND		ATTORNEY'S DOCKET NUMBER	
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. § 371				449122021400 U.S. APPLICATION NO. (If known, see 37 CFR 1.5) <div style="font-size: 2em; font-weight: bold; text-align: center;">107069787</div> <div style="text-align: center;">Not yet assigned</div>	
INTERNATIONAL APPLICATION NO.		INTERNATIONAL FILING DATE		PRIORITY DATE CLAIMED	
PCT/DE00/02860 ✓		August 22, 2000 ✓		August 30, 1999 ✓	
TITLE OF INVENTION					
METHOD AND DEVICE FOR PROCESSING SIGNALING INFORMATION IN A TELECOMMUNICATIONS NETWORK					
APPLICANT(S) FOR DO/EO/US					
Christian FREYENBERG ✓					
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:					
<ol style="list-style-type: none"> 1. <input checked="" type="checkbox"/> This is a FIRST submission of items concerning a filing under 35 U.S.C. 371. 2. <input type="checkbox"/> This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371. 3. <input type="checkbox"/> This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (21) indicated below. 4. <input checked="" type="checkbox"/> The US has been elected by the expiration of 19 months from the priority date (PCT Article 31). 5. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371(c)(2)) <ol style="list-style-type: none"> a. <input checked="" type="checkbox"/> is attached hereto (required only if not communicated by the International Bureau). b. <input checked="" type="checkbox"/> has been communicated by the International Bureau. c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US). 6. <input checked="" type="checkbox"/> An English language translation of the International Application under PCT Article 19 (35 U.S.C. 371(c)(2)). <ol style="list-style-type: none"> a. <input checked="" type="checkbox"/> is attached hereto. b. <input type="checkbox"/> has been previously submitted under 35 U.S.C. 154(d)(4). 7. <input type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3)). <ol style="list-style-type: none"> a. <input type="checkbox"/> are attached hereto (required only if not communicated by the International Bureau). b. <input type="checkbox"/> have been communicated by the International Bureau. c. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired. d. <input type="checkbox"/> have not been made and will not be made. 8. <input type="checkbox"/> An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)). 9. <input checked="" type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)). 10. <input type="checkbox"/> An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)). 					
Items 11. to 16. below concern document(s) or information included:					
<ol style="list-style-type: none"> 11. <input checked="" type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98. 12. <input checked="" type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included. 13. <input type="checkbox"/> A FIRST preliminary amendment. 14. <input type="checkbox"/> A SECOND or SUBSEQUENT preliminary amendment. 15. <input type="checkbox"/> A substitute specification. 16. <input type="checkbox"/> A change of power of attorney and/or address letter. 17. <input type="checkbox"/> A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825. 18. <input type="checkbox"/> A second copy of the published international application under 35 U.S.C. 154(d)(4). 19. <input type="checkbox"/> A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4). 20. <input checked="" type="checkbox"/> Other items: 1) Application Data Sheet; 2) Int'l Search Report; 3) IPER; 4) Return receipt postcard. 					
CERTIFICATE OF HAND DELIVERY					
I hereby certify that this correspondence is being hand filed with the United States Patent and Trademark Office in Washington, D.C. on February 28, 2002.					
<div style="font-family: cursive; font-size: 1.5em; margin: 0 auto; width: 200px;">Melissa Garton</div> <div style="text-align: center; margin-top: 5px;">Melissa Garton</div>					

U.S. APPLICATION NO. (if known, see 37 CFR 1.5) Not yet assigned 10/069787		INTERNATIONAL APPLICATION NO PCT/DE00/02860		ATTORNEY DOCKET NO 449122021400	
21. <input checked="" type="checkbox"/> The following fees are submitted: BASIC NATIONAL FEE (37 CFR 1.492(a)(1)-(5)): Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO.....\$1,040.00 International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO.....\$890.00 International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO.....\$740.00 International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provision of PCT Article 33(1)-(4).....\$710.00 International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4).....\$100.00				CALCULATIONS PTO USE ONLY	
ENTER APPROPRIATE BASIC FEE AMOUNT =				\$890.00	
Surcharge of \$130.00 for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(e)).				\$0	
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total claims	- 20 =		x \$18.00	\$0	
Independent claims	- 3 =		x \$84.00	\$0	
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ \$280.00	\$0	
TOTAL OF ABOVE CALCULATIONS =				\$890.00	
Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2.				\$0	
SUBTOTAL =				\$890.00	
Processing fee of \$130.00 for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(f)).				+ \$0	
TOTAL NATIONAL FEE =				\$890.00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property				+ \$0	
TOTAL FEES ENCLOSED =				\$890.00	
				Amount to be refunded:	\$
				charged:	\$
a. <input checked="" type="checkbox"/> Please charge my <u>Deposit Account No. 03-1952</u> (referencing Docket No. 449122021400) in the amount of \$890.00 to cover the above fees. A duplicate copy of this sheet is enclosed. b. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees that may be required, or credit any overpayment to <u>Deposit Account No. 03-1952</u> (referencing Docket No. 449122021400).					
NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.					
SEND ALL CORRESPONDENCE TO: Kevin R. Spivak Morrison & Foerster LLP 2000 Pennsylvania Avenue, N.W. Washington, D.C. 20006-1888					
 SIGNATURE				Kevin R. Spivak Registration No. 43,148	
February 28, 2002					

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Description

Method and apparatus for processing signaling information in a telecommunications network

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The invention relates to a method for processing signaling information in a telecommunications network as claimed in the precharacterizing clause of patent claim 1, and to an apparatus for carrying out the method as claimed in the precharacterizing clause of patent claim 6.

Signaling information is transmitted between a subscriber terminal and a switching center in a telecommunications network either inband, that is to say within the channel provided for the user data, or outband, that is to say in a signaling channel provided exclusively for this purpose.

In the ISDN (Integrated Services Digital Network), for example, outband signaling is provided via the D channel.

In contrast, in an analog telephone network, the signaling is carried out inband before the actual communication, that is to say while the connection is being set up. During communication, signaling can be initiated by means of a hook flash, that is to say an interruption in the communication. In this case, the switching center detects that the communication link has been interrupted and signaling is desired. The switching center then connects a code receiver, for evaluating the signaling, into the connection.

The signaling information is used, for example, for initiating telecommunications services such as call-back, broker calls or call forwarding. These telecommunications services are carried out by software which is used in the switching center and runs on

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5 servers in the switching center. In order to introduce new telecommunications services, the software must be modified and must be reloaded onto the servers. However, this means interrupting the operation of the telecommunications services in the switching center for the time during which the modified software is being loaded. A further disadvantage is that any modification to the software running on the servers requires specific programming knowledge in the programming language in which the software is written. This is because the programming languages which are used for this purpose are generally machine-level programming languages, so that any modification to programs written in these programming languages is very complex.

15 One object of the present invention is thus to specify a method and an apparatus for processing signaling information in a telecommunications network, which also allows the introduction of new telecommunications services in addition to those provided by a switching center without any modification to programs installed on servers in the switching center.

25 This object is achieved by a method having the features of patent claim 1, and by an apparatus having the features of patent claim 6. Particular refinements of the invention can be found in the dependent patent claims.

30 The invention relates to a method for processing signaling information in a telecommunications network, with a switching center interchanging signaling information with a subscriber terminal. The signaling information is converted in the switching center to at least one message, which messages are transmitted to at least one telecommunications service server which is connected to the switching center, with the telecommunications service server or servers

carrying out the telecommunications service or services corresponding to the messages.

5 The method according to the invention advantageously allows telecommunications services to be introduced without any amendment to the programs running on the servers in the switching center, in that the telecommunications service servers which, so to speak, form an external expansion of the switching center, 10 carry out the telecommunications services. To do this, the signaling information which is received by the switching center must be passed on to the additional telecommunications service servers. According to the invention, this is done by converting the signaling 15 information to messages, which are passed on to the telecommunications service server or servers. For example, the messages may be converted to an appropriate protocol for interchanging data between the switching center and the telecommunications service 20 servers. New telecommunications services can thus be retrofitted simply by means of additional telecommunications service server applications. For example, telecommunications services such as call forwarding or outgoing call barring can be implemented 25 on a telecommunications service server. Furthermore, telecommunications services can be introduced irrespective of the manufacturer of the switching center. As in a computer network, the process of linking a number of telecommunications service servers 30 to the switching center makes it possible to distribute the computation load from the telecommunications services between the telecommunications service servers. The local processing of the telecommunications services in the switching center is thus partially 35 moved by the invention to one or more telecommunications service servers. The telecommunications service server or servers may preferably be in the form of an Internet server or servers, and can receive and transmit messages using

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the Internet protocol format. The subscriber terminal may be, in particular, a telephone, fax or modem, or else a network termination which has intelligent functions for signaling.

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It is particularly preferable for the telecommunications service server or servers each to have a large number of program routines for carrying out a number of telecommunications services, with the program routines being written in a relatively high level programming language. Telecommunications services can thus be introduced or amended particularly easily, since the program routines, which are written in the relatively high level programming language, just need to be reprogrammed on the telecommunications service server or servers. Since the program routines are written in a relatively high level programming language, amendment requires less effort, and is thus cheaper, than amendment of machine-level programs in the switching center.

The telecommunications service server or servers preferably carries out or carry out switching telecommunications services, with the switching telecommunications services expanding the switching services which are carried out by the switching center. Additional switching services can thus be introduced quickly and flexibly by means of the telecommunications service servers.

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The telecommunications service server or servers preferably carries out or carry out subscriber-specific or national-specific telecommunications services. For example, a subscriber may request additional telecommunications services, which are then enabled simply by providing additional program routines, or by expanding existing program routines, on the telecommunications service server or servers for that subscriber. The switching center handles only those

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telecommunications services which are the same for all subscribers; additional services, which are desired by the subscriber, are, in contrast, provided by the program routines on the telecommunications service server or servers. Furthermore, it is easier to test whether new telecommunications services gain acceptance with the customers for those services, since only the software in the telecommunication service servers need have the new services added to it, before or instead of having to integrate the services in a complex manner in the switching center software. Alternatively or additionally, the telecommunications services to be carried out by the program routines may also have national-specific telecommunications services. In this case, it is particularly advantageous for the switching center to carry out only telecommunications services which are independent of the state, that is to say telecommunications services which are the same in all states, and for the national-specific telecommunications services to be carried out by means of appropriate program routines in the telecommunications service server or servers. The switching center can thus be used throughout the world irrespective of national-specific telecommunications services. The national-specific telecommunications services are provided by appropriate telecommunications service server programs.

It is particularly preferable for the method to be used with ISDN. The signaling information is then control information for the ISDN D channel protocol, and the control information is interchanged via a D channel between the subscriber terminal and the switching center, with the control information having ISDN service information for at least one ISDN service, which information is converted in the switching center to messages and is transmitted to at least one ISDN D channel server which is connected to that switching center and corresponds to the telecommunications

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service server, and with the ISDN D channel server or servers carrying out the ISDN service or services corresponding to the messages.

- 5 The invention furthermore relates to an apparatus for processing signaling information in a telecommunications network, with a controller being provided for transmitting, receiving and processing the signaling information in a switching center and being
10 connected to a server in the switching center. According to the invention, the controller has a device for converting received signaling information, which relates at least to one telecommunications service, into messages, and has an interface for connecting at
15 least one telecommunications service server to the switching center, with the telecommunications service server or servers being intended for carrying out the telecommunications service or services.
- 20 Each telecommunications service server preferably has an interface for connection to the switching center, with the interface receiving messages from the switching center and calling telecommunications services, which correspond to the messages, on the
25 telecommunications service server or servers.

- In a further refinement of the invention, the telecommunications service servers are Internet servers, which are provided especially for processing
30 telecommunications services. This makes it possible to use IP telephony (Internet Protocol telephony).

- The apparatus is preferably used in the ISDN. The signaling information is then control information for
35 the ISDN D channel protocol, and the controller transmits and receives control information via a D channel, with the interface being used for connecting at least one ISDN D channel server as a telecommunications service server. The ISDN D channel

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server or servers preferably carries out or carry out ISDN services corresponding to the control information.

Further advantages and application options of the invention will be explained in the following text with reference to an exemplary embodiment of the invention using ISDN, and in conjunction with the drawing, in which:

Figure 1 shows a block diagram in which an ISDN subscriber terminal is connected to an ISDN switching center and in which, according to the invention, an ISDN D channel server is connected to the ISDN switching center, in order to carry out ISDN services.

Figure 2 shows the transmission of a D channel protocol between a first subscriber terminal, via an ISDN switching center, and a second subscriber terminal, and

Figure 3 shows how an ISDN D channel server is linked, as an Internet server, to an ISDN switching center.

In Figure 1, an ISDN subscriber terminal 10 is connected to an ISDN network termination 1 via an S0 bus 11. The ISDN network termination 1 is in turn connected to a digital ISDN switching center 5. A D channel 2 and two B channels 3 and 4 are provided between the ISDN switching center 5 and the ISDN network termination 1. The ISDN switching center 5 and the ISDN network termination 1 interchange signaling information via the D channel 2 using the DSS1 protocol (Digital Signaling System 1 Protocol) in accordance with ITU Recommendation Q.950. The signaling information which is interchanged via the D channel 2 is used, for example, to set up a connection between two subscribers, to clear an existing connection or to

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initiate various ISDN services such as a conference circuit, callback or call forwarding. For call forwarding, for example, a subscriber uses his terminal to signal to the ISDN switching center 5 that incoming
5 calls to the subscriber number corresponding to the subscriber terminal 10 should be passed onto a second subscriber number. The signaling which is for this purpose entered by the subscriber via the subscriber terminal 10 is transmitted as signaling information via
10 the D channel 2 to a D channel controller 7 for transmitting, receiving and processing the ISDN D channel protocol in the ISDN switching center 5. The D channel controller 7 is coupled to an ISDN server 8 in the ISDN switching center 5. A program for processing
15 the signaling information in the ISDN D channel protocol and for carrying out corresponding ISDN services runs on the ISDN server 8. The two B channels 3 and 4 are used in a B channel processing device 6 in the ISDN switching center 5, and are used for
20 transmitting data and/or voice.

The D channel controller 7 has a device 13 for converting control information received via the D channel, and has an interface 12 for connection of at
25 least one ISDN D channel server 9. The device for converting control information 13 received via the D channel converts control information and signaling information in the D channel protocol to messages which are transmitted via the interface 12 to the ISDN D
30 channel server or servers 9.

Program routines for carrying out ISDN services such as call forwarding, outgoing call bearing, or message waiting indication are provided on the ISDN D channel
35 server or servers 9. The program routines which are provided on the ISDN D channel server or servers 9 have in this case been developed in a relatively high level programming language, such as C or C++. Each of the ISDN D channel servers 9 has an interface for receiving

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messages from the D channel controller 7 in the ISDN switching center 5. The messages received by the interface of the ISDN D channel server 9 are used to carry out an appropriate program routine for an ISDN service. Outputs produced by the program routine are in turn converted by the interface of the ISDN D channel server 9 to messages, and are transmitted to the D channel controller 7 in the ISDN switching center 5. In the ISDN switching center 5, the received messages in the D channel controller 7 are received by the interface 12, are converted to corresponding control and signaling information using the D channel protocol, and are transmitted via the D channel 2 to the ISDN network termination 1.

Figure 2 shows the protocol architecture for transmitting control information via the D channel.

A first subscriber terminal 50 is in this case connected to a first digital ISDN switching center 52 via a first D channel 55. A second subscriber terminal 54 is connected via a second D channel 57 to a second digital ISDN switching center 53. The first ISDN switching center 52 and the second ISDN switching center 53 are connected to one another via a signaling line 56, via which protocols which are specific to the switching center are transmitted in accordance with the ITU-T No. 7 signaling system.

The OSI specification layers 1 to 3, which are used for the D channel protocol, are shown in the first subscriber terminal 50 and in the second subscriber terminal 54. The OSI specification layers 1 to 3 are likewise shown in the first switching center 52 and in the second switching center 53, on the side which is connected to the first subscriber terminal 50 and to the second subscriber terminal 54, respectively. The higher layers 4 to 7 (application-oriented layers) from the OSI specification have only an end-to-end

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significance for the transmission of control information in the D channel. These protocols are interchanged directly between the subscriber terminals, transparently via the ISDN network.

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The first ISDN switching center 52 is connected to an ISDN D channel server 51, which receives signaling information in the D channel protocol from the first ISDN switching center 52, and evaluates this signaling information. Programs for carrying out ISDN services are stored in the ISDN D channel server 51. The ISDN D channel server 51 starts a program for carrying out an ISDN service in accordance with the received control information. The first ISDN switching center 52 is thus relieved of the load of handling specific ISDN services, which are processed by the ISDN D channel server 51. Furthermore, ISDN services which are either subscriber-specific or national-specific or are intended to be introduced for the first time can be carried out by the ISDN D channel server 51. Thus, as already described above, the software in the first ISDN switching center 52 need not be amended in order to introduce new ISDN services, and amendments do not interrupt the operation of the first ISDN switching center 52. The process of linking a number of ISDN D channel servers to the first ISDN switching center 52 allows the load produced by the additional ISDN services to be distributed between these servers, as in a computer network. Additionally, this allows the capacity for additional ISDN services to be extended by linking additional ISDN D channel servers to the first ISDN switching center 52. For example, it is possible to provide special ISDN D channel servers for routing service requests to appropriate ISDN D channel servers (an MWI server routes a call forwarding service request to the ISCI server, which carries out that service).

The use of the method and of the apparatus according to the invention is not restricted to ISDN switching

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centers, but can also be used in private ISDN telecommunications systems. In this case, for example, an ISDN telecommunications system can be connected to a computer, which carries out additional ISDN services

5 which are not provided by that ISDN telecommunications system. The ISDN telecommunications system then transmits the signaling information of the D channel (as in the case of the ISDN switching center) to the computer, using the method according to the invention.

10 The computer then carries out those ISDN services which correspond to the transmitted signaling information in the D channel, and relieves the load on the ISDN telecommunications system. The fundamental principle of the ISDN telecommunications system therefore does not

15 differ from that of an ISDN switching center.

Figure 3 shows the use of an ISDN D channel server as an Internet server.

20 A large number of subscriber terminals 100 and 101 are connected to an ISDN network termination 103 via an S0 bus 102. Two B channels 105 and one D channel 104 are provided for transmitting signals between the ISDN network termination 103 and an ISDN switching center

25 106.

The ISDN switching center 106 is connected to the public telephone network 107 for voice and data transmission between subscribers.

30 The ISDN switching center 106 is connected via an Internet link 109 to a first Internet server 110, which operates as an ISDN D channel server. The first Internet server 110 is connected to the Internet 108,

35 and is connected to a large number of further Internet servers 111 via the Internet 108.

If a subscriber terminal 100 or 101 now requests an ISDN service which is processed by an ISDN D channel

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protocol server, then the service request is transmitted via the D channel 104 to the ISDN switching center 106. The ISDN switching center 106 then converts the received service request to a message in the Internet protocol format, and transmits this message via the Internet link 109 to the first Internet server 110. The first Internet server 110 then processes the received message, and carries out the ISDN service corresponding to it. If a response is produced to this, the first Internet server 110 passes this response back via the bidirectional Internet link 109 to the ISDN switching center 106. If, for example, a subscriber wishes to use his ISDN subscriber terminal to make an IP telephone call (Internet protocol telephone call), then he can signal the request for an ISDN service "IP telephone call" to the ISDN switching center 106 via the D channel 104. The ISDN switching center 106 then transmits the service request via the Internet link 109 to the first Internet server 110, which in turn sets up an IP telephone call connection via the Internet.

Although the exemplary embodiments describe the use of the invention with ISDN, the invention, in accordance with the claims, is not restricted to ISDN. The invention can be used just as well in an analog telephone network or in IP-based/packet-switching networks. Anyone skilled in the art will immediately be familiar with the modifications required to the invention for this purpose. All the parts and method steps described above are claimed as being significant to the invention not only in their own right but also in any combination, in particular the details illustrated in the drawings. Appropriate modifications therefrom are familiar to anyone skilled in the art.

Patent Claims

1. A method for processing signaling information in a telecommunications network, with a switching center (5) interchanging signaling information with a subscriber terminal (10), characterized in that the signaling information is converted in the switching center (5) to at least one message which is transmitted to at least one telecommunications service server (9) which is connected to the switching center (5), with the telecommunications service server or servers (9) carrying out the telecommunications services corresponding to the messages.
2. The method as claimed in claim 1, characterized in that the signaling information is control information for the ISDN D channel protocol, and the control information is interchanged via a D channel (2) between the subscriber terminal (10) and the switching center (5), with the control information having ISDN service information for at least one ISDN service, which information is converted in the switching center (5) into messages and is transmitted to at least one ISDN D channel server (9) which is connected to the switching center (5) and corresponds to the telecommunications service server, and with the ISDN D channel server or servers (9) carrying out the ISDN service or services corresponding to the messages.
3. The method as claimed in claim 1 or 2, characterized in that the telecommunications service server or servers (9) each has or have a large number of program routines for carrying out a number of telecommunications services, with the program routines being written in a relatively high level programming language.

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4. The method as claimed in claim 1, 2 or 3, characterized in that the telecommunications service server or servers (9) carries out or carry out switching telecommunications services, with the switching telecommunications services expanding the telecommunications services which are carried out by the switching center (5).
5. The method as claimed in claim 3 or 4, characterized in that the telecommunications service server or servers (9) carries out or carry out subscriber-specific or national-specific telecommunications services.
6. An apparatus for processing signaling information in a telecommunications network, with a controller (7) being provided for transmitting, receiving and processing the signaling information and being connected to a server (8) in a switching center (5), characterized in that the controller (7) has a device for converting received signaling information, which relates at least to one telecommunications service, into messages (13), and has an interface (12) for connecting at least one telecommunications service server (9) to the switching center (5), with the telecommunications service server or servers (9) being intended for carrying out the telecommunications service or services.
7. The apparatus as claimed in claim 6, characterized in that the signaling information is control information for the ISDN D channel protocol, and the controller (7) transmits and receives control information via a D channel (2), with the interface (12) being used for connecting at least one ISDN D channel server (9) as a telecommunications service server.
8. The apparatus as claimed in claim 6 or 7,

characterized in that

the telecommunications service server or servers (9) has or have an interface for connection to the switching center (5), with the interface receiving
5 messages from the switching center (5) and calling telecommunications services, which correspond to the messages, on the telecommunications service server or servers (9).

10 9. The apparatus as claimed in claim 6, 7 or 8, characterized in that
the telecommunications service server or servers (9) is or are an Internet server or internet servers, which is or are connected to the Internet.

15 10. The apparatus as claimed in claim 7, characterized in that
the ISDN D channel server or servers (9) carries out or carry out the ISDN services corresponding to the
20 control information.

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Patent Claims

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1. A method for processing signaling information in a telecommunications network, with a switching center (5) interchanging signaling information with a subscriber terminal (10), with the signaling information being converted in the switching center (5) to at least one message which is transmitted to at least one telecommunications service server (9) which is connected to the switching center (5), and with the telecommunications service server or servers (9) carrying out the telecommunications services corresponding to the messages characterized in that the message is transmitted via the Internet to an Internet server, as the telecommunications service server.

2. The method as claimed in claim 1, characterized in that the signaling information is control information for the ISDN D channel protocol, and the control information is interchanged via a D channel (2) between the subscriber terminal (10) and the switching center (5), with the control information having ISDN service information for at least one ISDN service, which information is converted in the switching center (5) into messages and is transmitted to at least one ISDN D channel server (9) which is connected to the switching center (5) and corresponds to the telecommunications service server, and with the ISDN D channel server or servers (9) carrying out the ISDN service or services corresponding to the messages.

3. The method as claimed in claim 1 or 2, characterized in that

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the telecommunications service server or servers (9) each has or have a large number of program routines for carrying out a number of telecommunications services, with the program routines being written in a relatively high level programming language.

4. The method as claimed in claim 1, 2 or 3, characterized in that the telecommunications service server or servers (9) carries out or carry out switching telecommunications services, with the switching telecommunications services expanding the telecommunications services which are carried out by the switching center (5).

5. The method as claimed in claim 3 or 4, characterized in that the telecommunications service server or servers (9) carries out or carry out subscriber-specific or national-specific telecommunications services.

6. An apparatus for processing signaling information in a telecommunications network, with a controller (7) being provided for transmitting, receiving and processing the signaling information and being connected to a server (8) in a switching center (5), with the controller (7) having a device for converting received signaling information, which relates at least to one telecommunications service, into messages (13), and having an interface (12) for connecting at least one telecommunications service server (9) to the switching center (5), with the telecommunications service server or servers (9) being intended for carrying out the telecommunications service or services characterized in that the telecommunications service server or servers (9) is or are (an) Internet server or servers, which is or are connected to the Internet.

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7. The apparatus as claimed in claim 6, characterized in that the signaling information is control information for the ISDN D channel protocol, and the controller (7) transmits and receives control information via a D channel (2), with the interface (12) being used for connecting at least one ISDN D channel server (9) as a telecommunications service server.

8. The apparatus as claimed in claim 6 or 7, characterized in that the telecommunications service server or servers (9) has or have an interface for connection to the switching center (5), with the interface receiving messages from the switching center (5) and calling telecommunications services, which correspond to the messages, on the telecommunications service server or servers (9).

9. The apparatus as claimed in claim 7, characterized in that the ISDN D channel server or servers (9) carries out or carry out the ISDN services corresponding to the control information.

FIG 1

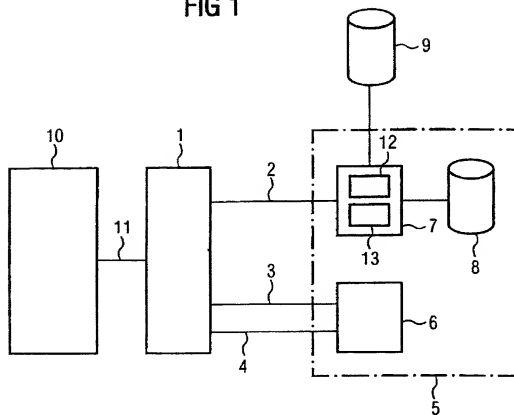
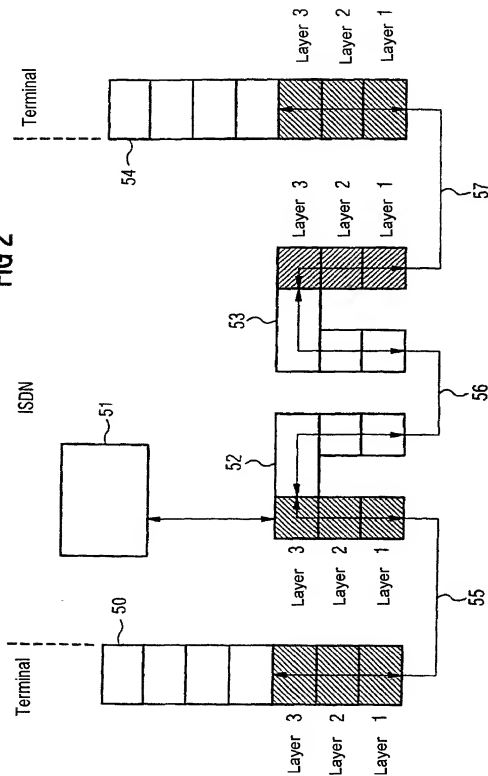
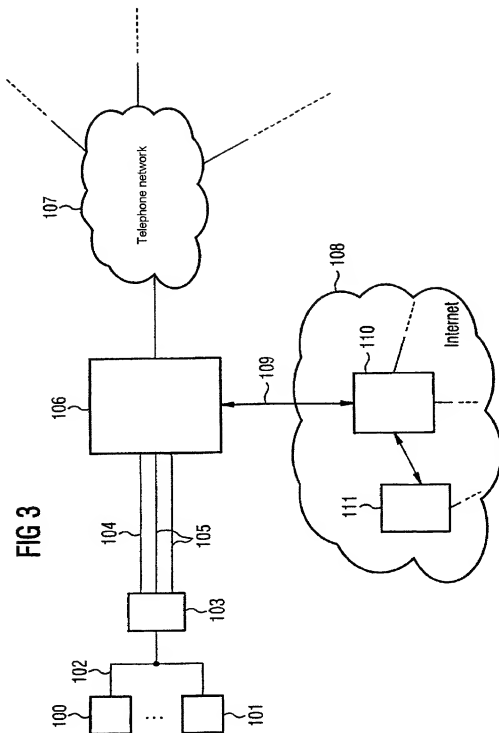


FIG 2





Declaration and Power of Attorney for Patent Application**Erklärung Für Patentanmeldungen Mit Vollmacht****German Language Declaration**

Als nachstehend benannter Erfinder erkläre ich hiermit an Eides Statt:

dass mein Wohnsitz, meine Postanschrift, und meine Staatsangehörigkeit den im Nachstehenden nach meinem Namen aufgeführten Angaben entsprechen,

dass ich, nach bestem Wissen der ursprüngliche, erste und alleinige Erfinder (falls nachstehend nur ein Name angegeben ist) oder ein ursprünglicher, erster und Miterfinder (falls nachstehend mehrere Namen aufgeführt sind) des Gegenstandes bin, für den dieser Antrag gestellt wird und für den ein Patent beantragt wird für die Erfindung mit dem Titel:

Verfahren und Vorrichtung zum
Verarbeiten von
Signalisierungsinformationen in einem
Telekommunikationsnetz

deren Beschreibung

(zutreffendes ankreuzen)

☐ hier beigefügt ist.

☒ am 22.08.2000 als

PCT internationale Anmeldung

PCT Anmeldungsnummer PCT/DE00/02860

eingereicht wurde und am _____

abgeändert wurde (falls tatsächlich abgeändert).

Ich bestätige hiermit, dass ich den Inhalt der obigen Patentanmeldung einschliesslich der Ansprüche durchgesehen und verstanden habe, die eventuell durch einen Zusatzantrag wie oben erwähnt abgeändert wurde.

Ich erkenne meine Pflicht zur Offenbarung irgendwelcher Informationen, die für die Prüfung der vorliegenden Anmeldung in Einklang mit Absatz 37, Bundesgesetzbuch, Paragraph 1.56(a) von Wichtigkeit sind, an.

Ich beanspruche hiermit ausländische Prioritätsvorteile gemäss Abschnitt 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 119 aller unten angegebenen Auslandsanmeldungen für ein Patent oder eine Erfindersurkunde, und habe auch alle Auslandsanmeldungen für ein Patent oder eine Erfindersurkunde nachstehend gekennzeichnet, die ein Anmeldedatum haben, das vor dem Anmeldedatum der Anmeldung liegt, für die Priorität beansprucht wird.

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

Method and device for processing
signaling information in a
telecommunications network ✓

the specification of which

(check one)

☐ is attached hereto.

☒ was filed on 22.08.2000 as ✓

PCT international application

PCT Application No. PCT/DE00/02860 ✓

and was amended on _____
(if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed.

10069737.027602

IDNR 2550 / V: 99-1.00 / B: Val

German Language Declaration

Prior foreign applications
Priorität beansprucht

Priority Claimed

19941143.3 / DE
(Number) (Country)
(Nummer) (Land)

30.08.1999 /
(Day Month Year Filed)
(Tag Monat Jahr eingereicht)

☒ ☐
Yes No
Ja Nein

(Number) (Country)
(Nummer) (Land)

(Day Month Year Filed)
(Tag Monat Jahr eingereicht)

☐ ☐
Yes No
Ja Nein

(Number) (Country)
(Nummer) (Land)

(Day Month Year Filed)
(Tag Monat Jahr eingereicht)

☐ ☐
Yes No
Ja Nein

Ich beanspruche hiermit gemäss Absatz 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 120, den Vorzug aller unten aufgeführten Anmeldungen und falls der Gegenstand aus jedem Anspruch dieser Anmeldung nicht in einer früheren amerikanischen Patentanmeldung laut dem ersten Paragraphen des Absatzes 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 122 offenbart ist, erkenne ich gemäss Absatz 37, Bundesgesetzbuch, Paragraph 1.56(a) meine Pflicht zur Offenbarung von Informationen an, die zwischen dem Anmeldedatum der früheren Anmeldung und dem nationalen oder PCT internationalen Anmeldedatum dieser Anmeldung bekannt geworden sind.

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §122, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application.

PCT/DE00/02860 /
(Application Serial No.)
(Anmeldeseriennummer)

22.08.2000 /
(Filing Date D, M, Y)
(Anmeldedatum T, M, J)

anhängig
(Status)
(patentiert, anhängig,
aufgegeben)

pending
(Status)
(patented, pending,
abandoned)

(Application Serial No.)
(Anmeldeseriennummer)

(Filing Date D, M, Y)
(Anmeldedatum T, M, J)

(Status)
(patentiert, anhängig,
aufgeben)

(Status)
(patented, pending,
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Ich erkläre hiermit, dass alle von mir in der vorliegenden Erklärung gemachten Angaben nach meinem besten Wissen und Gewissen der vollen Wahrheit entsprechen, und dass ich diese eidesstattliche Erklärung in Kenntnis dessen abgebe, dass wissentlich und vorsätzlich falsche Angaben gemäss Paragraph 1001, Absatz 18 der Zivilprozessordnung der Vereinigten Staaten von Amerika mit Geldstrafe belegt und/oder Gefängnis bestraft werden können, und dass derartig wissentlich und vorsätzlich falsche Angaben die Gültigkeit der vorliegenden Patentanmeldung oder eines darauf erteilten Patentes gefährden können.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that wilful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such wilful false statements may jeopardize the validity of the application or any patent issued thereon.

German Language Declaration

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POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. (list name and registration number)

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And I hereby appoint

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Ext. _____

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Unterschrift des Erfinders <i>Christian Freyenberg</i>	Datum <i>16.1.2002</i>	Inventor's signature	Date
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Staatsangehörigkeit DE		Citizenship DE	
Postanschrift PISCHELTSRIEDER 6		Post Office Address PISCHELTSRIEDER 6	
82057 ICKING		82057 ICKING	
Voller Name des zweiten Miterfinders (falls zutreffend):		Full name of second joint inventor, if any:	
Unterschrift des Erfinders	Datum	Second Inventor's signature	Date
Wohnsitz		Residence	
Staatsangehörigkeit		Citizenship	
Postanschrift		Post Office Address	

(Bitte entsprechende Informationen und Unterschriften im Falle von dritten und weiteren Miterfindern angeben).

(Supply similar information and signature for third and subsequent joint inventors).

10069787-022802